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January, 1973

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The Health Bulletin

The Official Publication of The North Carolina State Board of Health



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THE HEALTH BULLETIN

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On the Cover

Dr. John Gregg examines sensory nerves of a patient with facial pain. The examination is part of an in-depth neurologic examination that each patient is given upon entering the pain clinic. Purpose is to determine if there are neurologic disorders that might be contributing to the pain problem. Other tests include electromyography, nerve conduction studies and electroencephalography.

COMMENT

Shot Follow-up Stressed



Irvin

By
John Irvin
Coordinator
Immunization Program

DATA from a recent immunization level survey indicate that only 38 percent of North Carolina's two-year olds have completed a minimal basic immunization series, i.e. three or more doses of DTP and oral polio vaccines and vaccination against measles and rubella. One-fifth of the two-year olds had less than three DTP shots, and one-third had less than three doses of oral polio vaccine. One-third were unvaccinated against measles; one-half had not had rubella vaccine. Private medicine and local health departments provided immunizations to an almost equal number of children, and only five percent of the surveyed population had had no immunizations of any kind. Why did 95 percent of the two-year olds begin immunizations while only 38 percent completed a relaxed basic immunization series? I believe it was largely attributed to the lack of a systematic and flexible approach to serving the patients. First, the child must be kept in the immunization system. Keeping him there requires record keeping and appropriate follow-through at the local health department and private physician level. Secondly, private and public medicine must be flexible and take advantage of every immunization opportunity. New immunization recommendations now permit the simultaneous use of DTP, oral polio, measles and rubella vaccines in children over 12 months of age. Proper utilization of this new option should in itself greatly reduce the number of underimmunized children.

Strange Pain . . . UNC Establishes Clinic

FOR over a year the 62-year-old woman had suffered periodic episodes of tortuous pain in her lower jaw. The episodes, which lasted as long as 20 minutes at a time, left her exhausted, and more than a little confused as to the reason for such excruciating pain.

The pain began as something resembling a dull toothache. Later, it progressed to sharp, stabbing pain that could be induced by the slightest touch. A gentle breeze, even the touch of food on the lips would cause intense pain. Finally, she was referred to the newly organized pain clinic at the Dental Research Center, a part of the UNC Medical Complex, Chapel Hill. The clinic is made up of a group of doctors who are examining, studying, discussing and treating patients with pain problems on a team basis.

A physical examination revealed diabetes and high blood pressure. In fact, according to Dr. John M. Gregg, an investigator at the Dental Research Center, who sparked development of the pain clinic, the patient's physical condition had deteriorated to the

point where surgery had to be ruled out as a means of providing relief.

Next, an attempt was made to locate the actual source that was triggering the pain, which generally appeared on a two-week cycle. After a complete physical examination, findings were presented to members of the clinic staff—which includes specialists from the departments of neurosurgery, anesthesiology, psychiatry, internal medicine, pharmacology, physiology, occupational and physical therapy, as well as the School of Dentistry. The diagnosis was tic douloureux, a syndrome which causes acute pain of the facial nerves.

The patient was placed on an anti-convulsive drug which had the effect of dampening the stabbing pain. Dr. Gregg pointed out that it took a while for the patient to adjust to the drug, but she has now been comfortable for nearly three months. "She is receiving supportive psychological care because of the emotional trauma she has experienced. The corps of doctors will reevaluate her case in the near future to determine if the prescribed treatment is good for

the long run," he said.

Dr. Gregg explained that although pain is a phenomenon that occurs in all parts of the body, many kinds of bizarre and chronic pains appear in the jaw and face region. The incidence of pain in the jaw and face may be higher than for any other region of the body of comparable size. "Perhaps the reason why is because there is periodically so much disease: in the jaw associated with teeth, the throat associated with tonsils and face associated with sinus tissues," he said.

Many authorities feel that pain or the anxiety concerning pain is the greatest single deterrent to proper oral health care. Dr. Gregg contends that because of painful experiences early in life, patients often avoid seeking the kinds of routine treatment, such as dental infection control, that ironically could prevent the more severely painful conditions that result from neglect. "The actual performance of even routine treatment activities such as dental extractions, dental restorations and periodontal therapy can be made more difficult or in some cases impossible when the dentist is unable to control the pain or the pain-anxiety of his patients.

"Chronic pain of the jaw and face that results from disease of nerve tissues is another aspect of the health problem," Dr. Gregg continued. "These disease conditions do not appear as one uniform, recognizable type of pain. Symptoms may be mild and of a

burning or itching quality that is felt at the skin or membrane surfaces, or pain may be felt deep within muscles or within the bony tissue.

"Patients may find the pain strange in sensation such as a crawling, drawing or buzzing feeling. The pain may be constant and appear without warning, or at the other extreme it may appear in instantaneous stabbing and shocking spasms that are brought on by simply touching the face. These last types of symptoms are characteristic of a form of trigeminal neuralgia (*tic douloureux*) which is known to be one of the most severe forms of pain known to mankind," he said.

The oral surgeon ventured that pain cannot be removed from emotion. "In the susceptible personality, the person who is dependent and somewhat depressed, a chronic pain is more likely to have a negative effect. Because of the very basic nature of pain itself with its obnoxious and fear-producing qualities, there are gradual rises in the anxiety levels of patients as the pain persists. As a matter of fact, this psychiatric component may eventually come to outweigh in importance the underlying basic pain sensation."

What are the causes of pain in the facial region? "Acute neuritis (inflammation of nerves) may arise from a great variety of lesions in the area including infection, tumors, direct injuries, and other visible reactions. In other cases chronic facial pain may re-



DR. JOSE GHIA . . . anesthesiologist, performs a nerve block on a patient with a pain problem. The procedure is used both to aid in diagnosis of the specific problem and also to bring immediate relief of severe pain problems that might arise from sources such as pinching of nerve roots and from poorly controlled cancer in various body regions.

sult from systemic disease conditions. For example, a number of the metabolic diseases states such as diabetes mellitus or pernicious anemia may cause chronic and often bizarre burning sensations in the facial tissues. Disease and aging processes in the blood vessels themselves can starve the tissues of oxygen and cause pain on this basis alone. Temporal arteritis (inflammation of the arteries in the temple) is an example of a condition in which the entire side of the face may be exquisitely painful because of thickening and inelasticity in the blood vessel walls.

"Perhaps the greatest source of

persisting pain conditions in the facial region is trauma or injury itself. When the sensory nerves are damaged either due to accidental facial fractures, through cutting during necessary surgery, the nerve tissue may react by degenerating. Unfortunately, nerves have the least ability to repair themselves of all the body tissue. The regenerated nerves often do not function as they once did. Most of the post-traumatic pains are only mildly aggravating and of a burning or itching character.

"New patient services and treatments, research and education are the general areas in which pain problems are being attacked," Dr.

Gregg stated. "A number of new drug therapies are available. Acute types of pain associated with medical or dental care are beginning to be controlled by new combinations of systemic drugs that can simultaneously sedate and calm the anxious patient, raise the pain threshold to give pain relief, permit necessary uncomfortable treatments, and at the same time provide better safety for the vital functions of the heart, lungs and brain.

"These treatments are opening up new avenues for the management of extremely anxious or psychotic individuals as well as the unmanageable pediatric or mentally retarded patients. Many of the newer techniques involve the use of 'dissociative' drug techniques, where the patient remains semi-conscious but has been placed in a detached or 'trance-like' state by the drug."

Dr. Gregg noted that another type of drug therapy that has now gained wide acceptance is the use of anti-convulsive drugs to control the severe stabbing pains of trigeminal neuralgia. "Although anti-convulsive drugs are giving encouraging results with most kinds of facial pain, ironically, there appears to be little effectiveness for the milder forms of pain that are seen more frequently in the facial region.

"Surgical approaches are being combined with physiological techniques for inhibiting the transmission of pain. Hypnosis is being used as an effective technique for

controlling milder and chronic forms of pain. Acupuncture has also proven effective in relieving patient pain, although the basis for its effectiveness is not yet clear."

Perhaps the most promising innovation in patient services in the treatment of pain is the development of the team approach. Dr. Gregg, acting as spokesman for the UNC team of specialists, cited relieving pain as the team's primary objective. "We hope to do this by serving as a source of information to physicians and dentists over the state who have to care for difficult pain problems. The day may come when computer assistance might help to transfer knowledge and assistance about pain problems to dentists and physicians in outlying areas that are not accessible to the major treatment centers. Too, through the team approach it is probable that research projects will come forward that will make clear the mechanisms behind pain problems, along with logical solutions to these problems," he said.

The research program relating to pain at the Dental Research Center at UNC is part of a national effort sponsored by the National Institute of Dental Research. Facial pain has also been singled out as a principal area for research by Dr. Seymour Kreshover, director of NIDR, for the 1970's. Beginning with the 1972 school year, the subject of pain is now taught all four years at the UNC School of Dentistry.

Public Health In North Carolina

The completion of the North Carolina nutrition survey and ensuing recommendations from a nutrition task force have been cited as one of the major public health accomplishments of recent years by Dr. Jacob Koomen, State Health Director.

The nutrition survey revealed that 43 percent of preschool children in North Carolina have inadequate diets, a factor which is frequently related to impaired growth and brain development, according to Dr. Koomen. Based on survey findings, one of the State Board of Health's primary budget requests for the coming biennium will be for funds to expand nutrition education.

With the coming of a new year, Dr. Koomen recapped public health highlights of the past year and spoke optimistically about objectives which the agency has set for itself as it begins its 96th year of service to citizens of the state.

In the area of dental health, Dr. Koomen pointed out that the agency's Dental Health Division has gained national attention for its program of plaque control, a technique involving flossing the teeth which research has shown can prevent dental disease.

Through an innovative educational approach, dentists and dental technicians across the state have been taught the flossing technique. The plaque control program is being brought to all age groups (adults and school children). Until this program was begun, preventive dentistry efforts were primarily aimed at school children. Additional funding has been requested in this area also for continuation and expansion of the program.

Other accomplishments of 1972 include:

- Development of a kidney dialysis and transplant program.
- The state laboratory handled over a million specimens, an all-time high.
- Training of approximately 1,800 ambulance attendants.
- The State Board of Health assisted each of the state's 100 counties in developing a county-wide solid waste management program.
- Last year, 125 open trash dumps were closed and 56 sanitary landfills became operational in compliance with State Board of Health rules and regulations.
- Appropriate arrangements are being made for dispersal of \$70 million in state funds to local governments for development of safe water systems under the water supply grants program.
- Approximately a half-million doses each of measles vaccine and rubella (German measles) vaccine have been supplied and/or administered by the immunization program.



Ben Eaton, Director of Administrative Services of the N. C. State Board of Health, Dr. Jacob Koomen, State Health Director, and Dr. Burns Jones, Assistant State Health Director, discuss programs and activities for the State Board of Health for 1973.

- A statewide gonorrhea program has been launched to find and treat people with gonorrhea and their contacts.

The accomplishments of 1972 are already history, Dr. Koomen observed. "Health challenges of 1973 promise to be equally exciting. With the General Assembly in session this year, we anticipate adoption of new public health legislation which we are currently preparing in conjunction with the Department of Human Resources. We are looking forward to reports of several health-related legislative study commissions, in particular the ones on delivery of local public health services and emergency medical care. We will also be seeing the impact of considerable federal legislation covering the entire health field, but most intensively related to the state's function in Medicare and

Medicaid," he said.

"Some of our plans for the coming year depend on how the legislature apportions funds. Our most pressing needs budget-wise for the coming biennium are funds to increase the number of ambulance attendants being trained, funds to expand the services of the Medical Examiner System, and to improve certain elements of sanitation. We have also requested additional money to strengthen county health departments. We are hopeful that the General Assembly will grant funds for these much needed program increases," Dr. Koomen said.

"The coming year should indeed be an exciting one for public health as the State Board of Health continues its efforts to provide innovative and high quality public health services to North Carolinians," he concluded.

GALLSTONES: New Method of Treatment

ACH year the gallbladder, one of the body's smallest organs and one which the body does not even need to survive, is responsible for the expenditure of approximately one billion dollars for medical and surgical treatment of gallstones. Health statistics reveal that close to 500,000 Americans have their gallstones removed each year, with the illness and recovery period causing each of them to be out of work up to a month or longer.

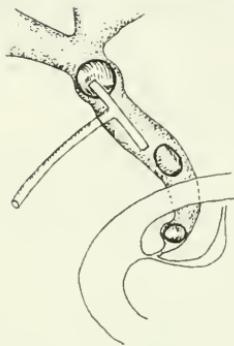
Although the number of deaths caused by gallstones is relatively low (only 35 in North Carolina in 1971), the large number of people affected and the resulting high costs in terms of medical expenses and temporary disability, merit the interest and concern of medical professionals and the consumers of medical services.

Gallbladder diseases are not selective in their victims. Even presidents are not exempt. Lyndon Baines Johnson had his gallbladder removed during his stay in the White House. Just as a person is

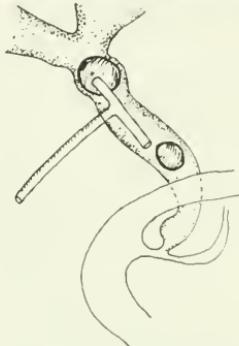
susceptible to an acute appendicitis, anyone can have acute cholecystitis (inflamed gallbladder). Any human being can develop gallstones, although the incidence of gallstones appears to be higher in females and Indians.

The gallbladder is about the size of a small lemon. It is located on the right side of the body, on the undersurface of the liver. Its function is to store bile which is produced by the liver. Bile (made up primarily of bile salts and cholesterol) is a bitter fluid, varying in color from golden brown to greenish yellow. When food enters the upper part of the digestive tract, the gallbladder contracts and empties bile into the first part of the small intestine under the influence of the hormone cholecystokinin. Bile combines with fatty foods and the fat soluble vitamins (A, D, K, and E) so that the intestine can absorb their nutrients and refuel the body's energy supply.

The most prevalent gallbladder disorder is gallstones (cholelithi-



ADMISSION



5 DAYS OF HEPARIN

AT THE UNC SCHOOL OF MEDICINE, research is currently being conducted to determine the possibilities of dissolving gallstones in the hepatic and common bile ducts by using the anti-clotting drug heparin. These X-rays show results of the heparin-drip technique on a patient who had three stones in the common bile duct. On admission, three stones were visible. Five days after being treated with heparin, one stone was dissolved. Eight days later only one stone remained. Treatment was continued for 11 days when X-rays revealed all three stones had disappeared. (See p. 13 for final results.)

asis), according to Dr. Eugene Bozymski, gastroenterologist at the University of North Carolina School of Medicine. He estimated that as many as 16 million Americans have gallstones.

Dr. Bozymski said that the exact cause of gallstones is not known. "However, one of the main theories is that there is a chemically abnormal bile excreted by the liver which is then stored in the gallbladder. In some people, the concentration of bile salts de-creas-

es relatively to the increasing concentration of cholesterol. This causes cholesterol seed crystals to form. Around these crystals, stones develop and grow. Most gallstones are cholesterol stones. The role of infection in the development of gallstones remains to be clarified."

The size of gallstones varies from patient to patient, he said, with some stones as big as the gallbladder itself and others just barely visible. The number of

stones found in a gallbladder also varies from one to dozens.

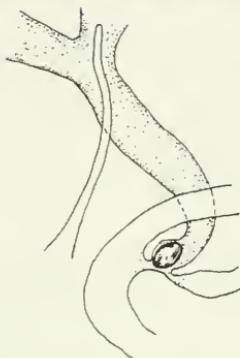
Gallstones primarily occur in middle-aged people, in the 40's and 50's. Approximately three times as many women as men have gallstones, although medical science has not yet been able to answer why. It is not known whether gallstone formation is due to constitutional makeup or genetic factors. For many years medical students were taught to suspect gallstones among women who were "fair, fat, forty, and fertile;" or in other words, women who were light-skinned, obese, middle-aged and the mother of several children. Dr. Bozymski indicated, however, that in light of recent findings, the "four F's" are no longer dependable in diagnosing gallstones. He explained that research among the Pima Indians in Arizona revealed that 70 percent of the females of the dark skinned tribe had gallstones by their 30th birthday and the same percentage of Pima Indian males developed gallstones, but later in life. Research findings also discounted the relationship of motherhood and obesity to the formation of gallstones. To date, research has not established any relationship between diet and formation of gallstones.

Of the 16 million Americans who have gallstones, probably two-thirds are not aware that they have them, Dr. Bozymski noted. "These people have what we call silent gallstones, with no pain or discomfort caused by the presence of stones in the gallbladder. Gall-

stones cause symptoms and become a health hazard when they get firmly lodged into a position at the neck of the gallbladder or in the common bile duct, blocking the duct and often causing the gallbladder to become inflamed. The liver continues to produce bile, but with the ducts blocked, the bile has no place to go but back into the liver and then into the blood. With this type of obstruction, a person's skin often takes on a yellowish, or jaundiced, appearance."

Dr. Bozymski said that other symptoms of gallbladder obstruction include cramping pain in the right upper side, fever and chills, nausea and vomiting. Itching may occur in long-standing obstruction because of increased concentration of bile salts in the skin.

Dr. Bozymski said many victims of gallbladder obstruction think they are having a heart attack. Before making a diagnosis of gallbladder disease, the physician must rule out the possibility of heart disease, peptic ulcer disease, pancreatitis (inflamed pancreas) and small bowel obstruction, all of which may cause similar symptoms. In making the diagnosis, the physician takes a complete clinical history, gives the patient a thorough physical examination along with a battery of chemical tests for liver function as well as X-rays of the gallbladder. Dr. Bozymski said the physical examination often reveals extreme tenderness in the patient's right side.



8 DAYS OF HEPARIN



11 DAYS OF HEPARIN

Surgical removal of the gallbladder is the primary means of treating gallstones with associated inflammation, according to Dr. Bozymski. Once the diagnosis of inflammation of the gallbladder is established, the surgeon may choose to remove the gallbladder, or as Dr. Bozymski prefers, treat the immediate problem by decompressing the gastrointestinal tract. This is done by giving the patient no nourishment by mouth and suctioning the stomach. Antibiotics are often given along with pain medication. Then, he usually recommends that the patient have elective surgery after a few months.

Dr. Bozymski points out that

after the pain is relieved and the acute attack subsides, this does not mean that the patient is well and can forget his gallstones. It is merely temporary relief. The stones are still there and attacks will probably continue, with each attack compounding the problem and possibly leading to permanent liver damage. Also, Dr. Bozymski stressed, if the patient continues putting off the operation, another attack may come at a time when increased age or another health problem may make surgery a much more serious risk.

Because of modern anesthetics and operative procedures, the mortality risk in an elective (non-acute) gallbladder removal opera-

tion is very low, Dr. Bozymski said. After a week or so of recovery in the hospital, the patient is discharged. Then after one or two week's rest at home, he is usually allowed to return to work, as long as physical strain is kept to a minimum. Dr. Bozymski explained that because the gallbladder is not essential, the body does not miss it when it is removed. The bile which the liver secretes into the hepatic ducts is adequate for proper absorption of fat and fat-related foods.

Because of the high rate of success of surgical treatment of gallstones and due to a lack of trained manpower and resources in this area, the lowly gallbladder has failed to receive equal research time with the major killer diseases such as cancer and heart disease. However, within the last five years, medical researchers at UNC School of Medicine and across the nation have shown renewed interest in the gallbladder and are now attempting to find answers to questions that could unlock the mysteries surrounding gallstones. How are gallstones formed? Why are some people susceptible and others are not? Is there a medicine that could provide an alternative to treating the patient by surgically removing the gallbladder? And, ultimately, can gallstones be prevented?

At UNC, a surgeon, Dr. Hubert C. Patterson is looking into the possibilities of using heparin (a drug that prevents the clotting of blood) to eliminate existing gall-

stones in the hepatic and common bile ducts by dissolving them. Initial experiments conducted by a Dr. Gardner in New York indicated that heparin was capable of dissolving stones when it was steadily dripped into the common bile duct, allowing the stone to be constantly bathed in the solution. In the past six months, Dr. Patterson has tried the heparin-drip technique on two patients. In one patient, his only stone disappeared in four days. In the other patient, who had three stones, they disappeared in 11 days.

Perhaps the most exciting development in gallbladder research deals with oral administration of bile salts to patients with gallstones, reported from the Mayo Clinic. Evidence so far indicates that patients who have taken bile salts have had their gallstones either reduced in size or in some instances have had them disappear altogether. Currently, the U.S. Public Health Service is in the process of setting up a center for coordinating a national research effort to determine the effectiveness and safety of the bile salt treatment of gallstones. Once the center is operational, contracts will be awarded to universities and institutions to conduct controlled clinical trials. Results of this effort may revolutionize gallstone treatment.

After years of neglect, there at last appears to be hope for a solution to gallstones that will not involve surgery and the ensuing man-hours lost from work.

State Of North Carolina Vital Statistics Summary

	October 1972	Year to Date 1972
Births	7,649	74,703
Deaths	3,908	39,385
Infant Deaths (under 1 year)	162	1,713
Fetal Deaths (stillbirths)	119	1,134
Marriages	3,175	40,452
Divorces and Annulments	1,597	14,504

Deaths from Selected Causes

Diseases of the heart (all forms)	1,416	14,023
Cancer (total)	627	5,960
Cancer of trachea, bronchus and lung	128	1,201
Cerebrovascular disease (includes stroke)	461	4,824
Accidents	330	3,070
Motor vehicle	207	1,695
All other	123	1,375
Diseases of early infancy	98	963
Influenza and pneumonia	90	1,320
Bronchitis, emphysema and asthma	45	547
Arteriosclerosis (hardening of arteries)	55	583
Hypertension (high blood pressure)	20	188
Diabetes	87	785
Suicide	50	507
Homicide	58	583
Cirrhosis of liver	61	551
Tuberculosis, all forms	6	103
Nephritis and nephrosis (certain kidney diseases)	24	228
Infections of kidney	23	196
Enteritis and other diarrheal diseases (stomach and bowel inflammations)	6	76
Ulcer of stomach and duodenum	9	110
Complications of pregnancy and childbirth	2	13
Congenital malformations	40	379
Infectious hepatitis	2	16
All other causes	398	4,360

Marriages, divorces and annulments are by place of occurrence, all other data are by place of residence.



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On the Cover

The biggest advantage in using cobalt in the treatment of cancer is that the equipment can be positioned at any angle to deliver therapy to any part of the body. The source of energy for this type of treatment is radioactive cobalt-60, an element that has been activated in a nuclear reactor. Cobalt radiation therapy also affords more protection for the skin, it is more economical, it is simple mechanically, and cobalt can be used to treat a wide spectrum of tumors.

COMMENT

Medicare-Medicaid Benefits Boosted



Phillips

By
Ernest Phillips
Chief
Medicare-Medicaid Section

AFTER more than three years of debate and public hearings by Congress, the 1972 Social Security Amendments were enacted into law. Not only do the amendments affect the payment of monthly retirement benefits but they make many significant changes in delivery of health care under the Medicare and Medicaid programs. Passage of the amendments is indicative of the priority placed by our legislators and health professionals on the improvement in the health delivery system. Medicare and Medicaid are relatively new programs. Yet, amendments were passed in 1970 and again in 1972 with the aim of improving and strengthening both Medicare and Medicaid. Such frequent revision of a federal program is not typical and underscores the national commitment to seek solutions to one of our most pressing problems. The 1972 amendments do not fully meet the needs of those under Medicare. Drugs and dental services are still not covered to the extent that is needed. There is little in the amendments that speaks to the problem of the upward spiral of health care costs. Yet the fact remains that Medicare is a far better program in 1972 than it was in 1966. It can safely be anticipated that future years will bring further improvements. However, improvements in our delivery of health care cannot come about solely through laws. Health professionals must constantly seek ways of providing the highest level of care at the best possible price. We must seek ways of more appropriately using our health facilities and our health personnel.

Radiation Lifts Cancer Cure Rate

ALTHOUGH the best chance for cure of cancer is still early detection, more successes are being achieved as a result of improvements in the delivery of radiation therapy, increased use of anti-cancer drugs and surgery—or combinations of all three.

Cancer is the second leading cause of death in the United States. Statistics indicate that about 350,000 people will die of cancer in the United States this year. It is estimated that one out of four people will develop cancer sometime during their lifetime.

In 1930 one out of five victims was cured of cancer. In 1970 the survival rate had increased to two out of six. Today, if all methods available for the treatment of cancer were made available to every patient who develops a malignant disease, it is believed that three out of six could be cured.

Objectives of radiation therapy fall into two main categories—radiation therapy with curative intent and radiation therapy with palliative intent (treatment given to relieve symptoms or to improve the quality of survival).

Why is radiation effective in the treatment of cancer? Abnorm-

al cells (tumor cells) are more susceptible to the effects of radiation, according to Dr. John Cella, associate radiologist at Rex Hospital in Raleigh. He explained, however, that normal cells are certainly affected by radiation but, being normal cells, they have the ability to survive whereas abnormal cells lose their ability to multiply and grow. Dr. Cella pointed out that normal cells can be destroyed or adversely affected by radiation given too fast, for too long a period of time or going to a dose that surpasses the tolerance of normal tissue.

Certain types of cancer lend themselves to radiation therapy more so than others. Results are now being achieved radiographically with some types of tumors that would not have been considered for treatment a few years ago. The linear accelerator, a 25 million volt X-ray unit at the UNC Medical Center and the more advanced cobalt units give flexibility to the treatment of a variety of cancers.

Dr. Norman Abramson, radiologist at the Duke Medical Center, notes that cancer of the pancreas, the gland that manufactures insu-



Before treatment begins the patient is fluoroscoped and X-rayed to define the exact dimensions of the tumor. This is necessary in order to confine treatment to the affected area. The area is then outlined on the patient's skin. Lead shielding blocks are shaped to protect healthy tissue adjacent to the tumor.

lin, and other types of gastrointestinal malignancies have not been treated with radiation in the past because of technical limitations. Now, according to Dr. Abramson, these diseases are being treated with encouraging results. Another type of tumor that lends itself to treatment by radiation is early cancer of the vocal cord.

The treatment of another disease with radiation has undergone radical change during the last five years. Dr. Gustavo S. Montana, professor of radiology at UNC, looks upon Hodgkin's Disease as one of the most interesting be-

cause it is potentially curable.

"It used to be a disease that was thought to be incurable," Dr. Montana said. "Now we look upon Hodgkin's Disease as curable in many cases. We have learned how to prescribe adequate doses of radiation and with the equipment available to us we can deliver these doses which some years ago we were not able to do."

"We know that Hodgkin's Disease is a disease that most likely starts in lymph nodes and that it spreads in a predictable pattern in that it goes to adjacent lymph nodes and ultimately to the larger

organs and the stomach. Using more refined diagnostic radiologic procedures we can map out the extent of the disease much better now."

The South American radiologist explained that an exploratory laparotomy is sometimes indicated in the treatment of Hodgkin's Disease. "The abdomen is opened and the lymph nodes are biopsied, along with the spleen and liver. In this way we get a more accurate assessment of the disease which enables us to make a better judgment in the selection of patients for radiation treatment who are potentially curable. At the same time we can outline the disease more accurately for administration of radiation.

"The course of radiation that patients with Hodgkin's Disease undergo can vary depending upon the extent of the disease—the prognosis also varies accordingly. But it is safe to say that in excess of 50 percent of these patients will survive five years if given the proper treatment. A few years ago their chances for survival were not anywhere as good. In addition, we have found that there are combinations of chemotherapeutic (chemical) agents that can be used to fight the disease effectively, particularly for patients beyond the scope of radiation or for those who have suffered a relapse of the disease in spite of radiation treatments," Dr. Montana said.

Radiologists have known for some time that a number of diseases could be cured with radia-

tion. The refinement of techniques and equipment have made treatment easier and more applicable for the patients. Dr. Montana pointed out that many women fall victim to cancer of the cervix. "We can provide them with much better treatment than we could have only a few years ago," he said. "Head and neck tumors, when detected early, can be readily cured with radiation. Another area of interest to us is radiation in conjunction with chemotherapy. Children with acute leukemia can be successfully managed and perhaps cured with chemical agents. It has been demonstrated, however, that some of these agents do not penetrate to leukemia cells that may be in the brain. As an adjunct to chemotherapy we now give these children brain radiation and in this way have attained more sustained remissions of the disease.

"Radiation in conjunction with surgery has been used, as was mentioned earlier, but the potential of this approach has not been fully explored," Dr. Montana said. In some instances radiation is used prior to an operation to enhance the likelihood of success with the surgery. The objective of preoperative surgery is to shrink the tumor in order to make it resectable. Sometimes tumors are attached to vital structures and cannot be removed. In some cases the tumor cannot be expected to be controlled exclusively with radiation, but when surgery and radiation are combined, better results can be expected.



The 25 million volt betatron X-ray unit is used mostly to treat deep-seated tumors. It is the only unit of its type in North Carolina. The patient wears ear pieces to protect against noise generated by the unit.

The area of postoperative radiation is also being explored in depth now. "Although it is generally believed that postoperative radiation is not as effective as preoperative radiation, there are instances when it may improve the chances of a patient's having a successful treatment," Dr. Montana said. "For instance, carcinoma of the breast is a very common disease and the treatment of choice, at the present time, is surgery. Postoperative radiation is sometimes given

to decrease the possibility that the tumor may return in the area where the operation is performed."

Cobalt and electricity (X-ray) are the sources of energy for therapeutic radiation. Cobalt is considered by most to be a dramatic breakthrough, a new and powerful source of radiation—used mainly as a last resort for cancer patients. Cobalt is not new (it has been in use about 20 years) and about the only advantage it has over X-ray is that the design of the



The treatment procedure is controlled from a panel connected to X-ray and cobalt units in other rooms. From this point the technologist can control the exact amount of radiation prescribed by the radio-therapist. The patient is monitored continually by closed circuit television in order to observe any movement or other indication of a problem.

unit in which the cobalt is encased is smaller and more flexible because the radioactive source is very small. As a result the unit can be positioned in many different angles. The treatment can be aimed from any direction in the body because the unit can be rotated.

The main advantage of X-ray over cobalt is that the different X-ray units can produce X-rays of varying energies which, in some instances, allows underlying tissues to be given higher doses with less damage to surrounding tissues. The more powerful X-ray units can deliver higher doses at

a greater depth.

Dr. Montana reasoned that there is need for better understanding of the time-dose factors in radiotherapy. "We can give a course of treatment in a short period of time, but we sometimes employ longer periods thinking we will get better results," he said. "I think that this very simple factor of radiation has not been explored in sufficient depth. As we gain more experience with the different schemes of radiation therapy, we may find that entirely different schemes of treatment apply to different tumors."



Flaherty Gets Human Resources Post

David T. Flaherty, former legislator and businessman, took office last month as Secretary of the Department of Human Resources.

Human Resources, the largest of the 21 newly reorganized state government departments, spends nearly one-fourth of the state budget, is comprised of some 30 agencies, commissions, committees, boards and councils, and employs over 20,000 people.

Flaherty listed as his primary objective the streamlining of the agencies so that they will provide more service and "do it at a more economical price."

Only the second to head the sprawling department, Flaherty pointed out that "We want to bring good management into this department and this means that first we will be reviewing all the

programs with the idea of dropping those that are not performing as they should and, secondly, pushing for those programs that we've needed but haven't been able to afford."

The biggest need in the public health field, Flaherty said, is providing more assistance to county health programs. "Right now the counties carry the burden. We must also improve the quality of our health departments in many of the poorer counties where they are not able to do the job that needs to be done."

Flaherty said the state should effect a savings of between \$50 to \$75 million in the next biennium with the governor's efficiency study task force and reorganization.

The Kidney Program ... a second chance at life

UNTIL recent years, a person who developed chronic renal (kidney) failure was doomed to almost certain death unless he could afford to pay \$20,000 a year to be kept alive by dialysis. Even so, the mystery and the ever-present possibility of rejection of a kidney transplant gave little hope of viewing the future with optimism.

Now, however, thanks to the kidney program implemented last year by the N. C. State Board of Health, a second chance at life has been put within reach of almost every North Carolinian suffering from kidney failure.

About 200 victims of chronic kidney disease in the state are now being kept alive through means of an artificial kidney (dialysis). The state program sponsors 50 of them.

The kidney program grew out of a joint effort by the State Board of Health, Duke Medical Center and the UNC School of Medicine

to make dialysis available to people who could not afford the cost. After being denied federal funds, the committee wrote legislation spelling out specifics of the problem and presented it to the 1971 General Assembly. The legislature passed the measure and awarded the State Board of Health \$500,000 for the biennium to establish and continue the program.

Dialysis is a procedure which involves circulating the blood through a machine to cleanse it of impurities. The six-hour procedure, done twice weekly for most patients, replaces the cleansing function of kidneys that no longer work.

While serious kidney disease does not strike as frequently as heart disease or cancer, its victims are faced with three alternatives—dialysis, transplant or death. It has been estimated that over 1,000 North Carolinians died from kidney or kidney-related diseases before dialysis became avail-



Ernest Howard, a native of Watha, N. C., watches as Lottie, his wife, takes his blood pressure. It's only one of the procedures she learned to do during a six-week course in home dialysis at the Hemodialysis Home Training Center at the Duke Medical Center. Howard, 53, is the victim of polycystic kidney disease, a congenital problem. The disease first appeared over 10 years ago. Both kidneys finally gave out and he was dialyzed for the first time last October. Mrs. Howard will have to be in attendance twice each week to manipulate the home dialysis unit — a process she has become quite proficient at.

able to all the state's citizens. Of these, 25 percent could have been saved through dialysis or transplantation.

The State Board of Health kidney program has made notable progress in a year. According to William G. Gainey, program manager, the program has filled a gap in services available to kidney disease sufferers. "Before the 1971 General Assembly funded the pro-

gram, only the rich, persons with insurance coverage, or those eligible for Medicaid could benefit from dialysis. Our program helps people who would be unable to pay the high costs of dialysis."

The kidney program provides financial assistance for dialysis in six medical centers located around the state—Duke, in Durham; UNC, Chapel Hill; Bowman Gray, Winston-Salem; Pitt Memorial Hos-

pital, Greenville; Memorial Mission, Asheville; and Charlotte Memorial. If a patient has insurance covering a portion of the cost, the program will provide the remainder.

Certain financial requirements must be met to enroll in the program but, according to Gainey, they are usually interpreted liberally. For example, a family of four with a net income of as much as \$11,000 a year would be eligible.

About five years ago a more compact version of the dialysis machine used in hospitals was developed for home use. For the first time, dialysis would cost considerably less than that received at hospitals (approximately \$5,000 a year, machine excluded). Patients who meet the State Board of Health kidney program requirements are usually eligible to receive a dialysis machine from N.C. Vocational Rehabilitation. The cost of the machine itself is about \$3,000.

If a kidney patient is considered able for home dialysis, the kidney program provides financial assistance for training him and a partner (usually the husband or wife). Training, which lasts about five weeks, is offered at the six medical centers listed above. In addition to training, the program provides home disposable supplies necessary to the operation of the machine, such as filters, blood sets and needles.

Half of the 200 North Carolinians currently on dialysis are on home units. The state program

consists of 25 patients on home dialysis and 25 who receive dialysis at a medical center.

In addition to lower cost for home dialysis, Gainey indicated another advantage is that the patient can use the machine at his convenience. Also, the psychological factor of being away from a hospital atmosphere lends itself to more rapid rehabilitation.

However, a serious deficiency has developed in the health care system between the patient at home on dialysis and the center—there is no place nearby where a home dialysis patient can go for help if he runs into a problem. Most medical people do not wish to assume responsibility for a patient on dialysis since most are not experienced in the new technique.

In an effort to deal with this problem, the kidney program recently sponsored a day-long seminar at Duke for 40 public health nurses who have dialysis patients in their areas. The nurses received instruction in kidney function, proper diet and health maintenance for dialysis patients and followup care for transplant patients.

While dialysis is the best available means of maintaining life, it is not considered a permanent solution to kidney failure. Dialysis is a supportive measure until a donor can be found and a transplant performed. In North Carolina, approximately 50 former victims of chronic renal disease now live relatively normal lives due to transplanted kidneys.



Howard looks with affection toward his saving grace . . . his mechanical companion.

The kidney transplant procedure is only 19 years old. The first successful kidney transplant was performed on identical twins in Boston in 1954. Identical twins were used because their blood and tissue type are alike. Since then, over 8,000 kidney transplants have been performed throughout the world.

While the operative technique for kidney transplants has been perfected, the body's constant attempt to reject foreign tissue continues to hamper efforts to make transplants the ultimate cure for chronic renal disease. However,

according to Dr. Stanley R. Mandel, assistant professor of surgery and head of transplantation at the UNC School of Medicine, development of anti-rejection drugs in the 1960's spurred progress in the field. "While science has not been able to find a drug that totally prevents rejection, the current success rate for transplants is approximately 80 percent for transplants from live related donors and 50 percent for deceased, non-related donors. These figures are based on transplanted kidneys that are functioning five years after the operation," Dr. Mandel

said.

In the early days of kidney transplants, the donor was usually the patient's mother, father, sister or brother because of greater compatibility of tissue and blood type. However, the success of anti-rejection drugs has led to more frequent use of organs from deceased donors. Dr. Mandel predicts that as tissue typing becomes more sophisticated and accurate, the success rate for deceased-donor kidneys will go even higher than 50 percent.

Kidneys from deceased donors are usually obtained from accident victims who die as a result of brain injury. A person who died from a brain tumor would not be an acceptable kidney donor for obvious reasons.

Transplant candidates in North Carolina may have to wait a month or as long as two years for a kidney, Dr. Mandel said. "The waiting period varies depending on the patient's blood type and how many kidneys become available for transplanting. Patients with a common blood type, "O" positive for example, must usually wait the longest. There are 15 candidates currently awaiting transplants from UNC."

Kidney transplants are most often performed on people between the ages of 15 and 50, Dr. Mandel said. "We place no age limit on transplant candidates, but the risks of such major surgery are always greater in the very old and very young.

"After a kidney transplant, pa-

tients usually return to leading a normal and satisfying life. The only restrictions are that the patient must always take anti-rejection drugs and use common sense to avoid infection and injury to the kidney. The drugs fool the body into accepting the foreign kidney, but at the same time they lower the body's resistance to infection, the most common cause of death in transplant patients," Dr. Mandel said.

Dr. Mandel expressed optimism for those patients whose transplanted kidneys were rejected or failed after several years. "Unlike a heart transplant, when the kidney stops functioning the patient does not automatically die. He can go back on dialysis and await another transplant," he said.

The kidney program provides an evaluation of a patient's living relatives for a possible donor. Funds are provided for a kidney from a deceased, non-related donor if the patient belongs to the kidney program.

Changes in the Social Security Act will eventually result in broadening the scope of the N. C. kidney program. For the first time, beginning July 1, 1973, workers paying Social Security tax and their dependents will be eligible for Medicare payments to cover costs of care for chronic renal disease after the first three months of dialysis. Relieved of the long term responsibility for patient care, the kidney program will be able to offer the service to a greater number of people.

State Of North Carolina Vital Statistics Summary

	November 1972	Year to Date 1972
Births	7,042	81,115
Deaths	3,884	43,269
Infant Deaths (under 1 year)	174	1,887
Fetal Deaths (stillbirths)	115	1,249
Marriages	3,760	44,212
Divorces and Annulments	1,554	16,058
Deaths from Selected Causes		
Diseases of the heart (all forms)	1,415	15,438
Cancer (total)	597	6,557
Cancer of trachea, bronchus and lung	128	1,329
Cerebrovascular disease (includes stroke)	475	5,299
Accidents	275	3,345
Motor vehicle	152	1,847
All other	123	1,498
Diseases of early infancy	94	1,057
Influenza and pneumonia	108	1,428
Bronchitis, emphysema and asthma	49	596
Arteriosclerosis (hardening of arteries)	63	646
Hypertension (high blood pressure)	21	209
Diabetes	59	844
Suicide	52	559
Homicide	57	640
Cirrhosis of liver	70	621
Tuberculosis, all forms	6	109
Nephritis and nephrosis (certain kidney diseases)	24	252
Infections of kidney	14	210
Enteritis and other diarrheal diseases (stomach and bowel inflammations)	5	81
Ulcer of stomach and duodenum	13	123
Complications of pregnancy and childbirth	3	16
Congenital malformations	42	421
Infectious hepatitis	1	17
All other causes	441	4,801

Marriages, divorces and annulments are by place of occurrence, all other data are by place of residence.



"Abstain from all media."

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